

a correlation system that obtains a correlation value between the long code group identification short code and each of a plurality of long code group identification short code candidates, in association with the slot timing;

a pattern specifying system that specifies a pattern comprising a plurality of long code group identification short codes, in association with the correlation value;

a frame timing specifying system that specifies a frame timing, in association with the pattern;

a long code group specifying system that specifies a long code group in association with the correlation value, concurrently with specifying of the frame timing; and

a long code specifying system that specifies a long code from among a plurality of long codes belonging to the long code group, in association with the frame timing.

6. A radio communication terminal apparatus that receives a slot having a long code group identification short code arranged at a predetermined position, comprising:

a slot timing specifying system that specifies a slot timing of the received slot;

a correlation system that obtains a correlation value between the long code group identification short code and each of a plurality of long code group identification short code candidates, in association with the slot timing;

an arrangement specifying system that specifies an arrangement of a plurality of long code group identification short codes, in association with the correlation value;

a frame timing specifying system that specifies a frame timing, in association with the arrangement;

a long code group specifying system that specifies a long code group in association with the correlation value, concurrently with specifying of the frame timing; and

a long code specifying system that specifies a long code from among a plurality of long codes belonging to the long code group, in association with the frame timing.

7. The radio communication terminal apparatus according to claim 5, wherein said apparatus receives a slot further having a short code common to all base stations arranged at the same position as the long code group identification short code, and said slot timing specifying system specifies the slot timing using the short code common to all base stations.

8. A radio communication base station apparatus comprising:

an arrangement system that arranges a long code group identification short code at a predetermined position on a slot; and

a transmission system that transmits the slot to the radio communication terminal apparatus according to claim 5.

9. The radio communication terminal apparatus according to claim 6, wherein said apparatus receives a slot further having a short code common to all base stations arranged at the same position as the long code group identification short code, and said slot timing specifying system specifies the slot timing using the short code common to all base stations.

10. The radio communication base station apparatus according to claim 8, wherein said arrangement system arranges a short code common to all base stations at the same position as the long code group identification short code.

11. A radio communication terminal apparatus that receives signals in which first masked symbols, on which a long code is masked and each of which is spread with only a short code common to all base stations, are arranged at equal intervals on a frame, and in which second masked symbols, on which the long code is masked and each of which is spread with only a long code group identification short code, are each multiplexed on a respective one of the first masked symbols according to a predetermined pattern, said apparatus comprising:

- a first correlation system that calculates a correlation between the received signal and the short code common to all base stations to obtain a first correlation value;

- a detecting system that detects a maximum value of the first correlation value to detect a timing of the first masked symbol;

- a second correlation system that calculates a correlation between each of the second masked symbols and each of a plurality of candidates for the long code group identification short code to obtain a second correlation value;

- an acquiring system that obtains a long code group in association with the long code group identification short code with a maximum value of the second correlation value, while detecting a beginning position of the long code in association with a pattern of the second correlation values to obtain a frame timing;

- a third correlation system that calculates a correlation between each of long codes belonging to the long code group and the received signal in association with the frame timing to obtain a third correlation value; and

an identification system that identifies the long code used by a base station that transmits the received signal, in association with the third correlation value.

12. A radio communication base station apparatus that transmits a signal to a radio communication terminal apparatus comprising a first correlation system that calculates a correlation value between a received signal and a short code common to all base stations to obtain a first correlation value, a detecting system that detects a maximum value of the first correlation value to detect a timing of a first masked symbol, on which a long code is masked and which is spread with only the short code common to all base stations, a second correlation system that calculates a correlation between a second masked symbol, on which the long code is masked and which is spread with only a long code group identification short code, and each of a plurality of candidates for the long code group identification short code to obtain a second correlation value, an acquiring system that obtains a long code group in association with the long code group identification short code with a maximum value of the second correlation value, while detecting a beginning position of the long code in association with a pattern of the second correlation values to obtain a frame timing, a third correlation system that calculates a correlation between each of long codes belonging to the long code group and the received signal in association with the frame timing to obtain a third correlation value, and an identification system that identifies the long code used by said radio communication base station apparatus, in association with the third correlation value, said radio communication base station apparatus comprising:

a multiplexing system that arranges the first masked symbols at equal intervals on a frame, and multiplexes the second masked symbols on the first masked symbols according to a predetermined pattern; and

a transmission system that transmits the signal having the first masked symbol and the second masked symbol.

13. A cell search method for searching a cell while receiving a slot having a long code group identification short code arranged at a predetermined position, wherein a long code group is specified while a frame timing is specified, in association with a correlation value between the long code group identification short code and each of a plurality of long code group identification short code candidates.

14. A radio communication method, comprising:

arranging first masked symbols, on which a long code is masked and each of which is spread with only a short code common to all base stations, at equal intervals on a frame, multiplexing second masked symbols, on which the long code is masked and each of which is spread with only a long code group identification short code, on a respective one of the first masked symbols according to a predetermined pattern, and transmitting a signal having the first masked symbol and the second masked symbol;

performing a first calculation of a correlation between the received signal and the short code common to all base stations to obtain a first correlation value;

detecting a maximum value of the first correlation value to detect a timing of the first masked symbol;

performing a second calculation of a correlation between each of the second masked symbols and each of a plurality of candidates for the long code group identification short code to obtain a second correlation value;

obtaining a long code group in association with the long code group identification short code with a maximum value of the second correlation value, while detecting a beginning position of the long code in association with a pattern of the second correlation values to obtain a frame timing;

performing a third calculation of a correlation between each of long codes belonging to the long code group and the received signal in association with the frame timing to obtain a third correlation value; and

identifying the long code used by a base station that transmits the received signal, in association with the third correlation value.---

Cancel claims 1-4 without prejudice or disclaimer of the subject matter.